REMARKS

In reply to the Office Action of December 28, 2005, Applicant submits the following remarks. Claims 1-2, 4-5, 7-14 and 24-27 have been amended. Claims 29-32 are new. Support for the amendments to the claims and the new claims can be in FIGS. 1-3 and the accompanying text. Claims 3 and 6 have been canceled. Applicant reserves the right to introduce the subject matter of the canceled subject matter in one or more continuing applications. Applicant respectfully requests reconsideration in view of the foregoing amendments and these remarks.

Section 102 Rejections

Claims 1-4, 7-14 and 24-28 were rejected as being rejected as anticipated by U.S. Patent No. 6,897,473 ("Burroughes"). The applicant respectfully traverses in light of the amendments made to claims 1 and 24.

Amended claim 1 is directed to an emissive polymer layer having host components, at least one of: electron traps or hole traps. The electron traps reduce electron mobility within the emissive polymer layer and the hole traps reduce hole mobility within the emissive polymer layer. If the layer includes electron traps, a first energy barrier to trap electrons between a LUMO level of the host components and a LUMO level of the electron traps is at least a thermal energy of the layer and a second energy barrier to trap holes between a HOMO level of the host components and a HOMO level of the electron traps is less than the thermal energy. If the layer includes hole traps, a third energy barrier to trap holes between a HOMO level of the host components and a HOMO level of the hole traps is at least the thermal energy, and a fourth energy barrier to trap electrons between a LUMO level of the host components and a LUMO level of the hole traps is less than the thermal energy.

Burroughes is directed to forming a light-emissive layer having a host polymer and components that accept positive or negative charge carriers (Abstract). The components assist in moving negative or positive charge carriers into or through the layer (*id.*). In one example, hole injection into light emitting material is facilitated by a material, e.g., TFB, that accepts holes (FIG. 12, col. 12, lines 61- col. 13, line 26). The holes are then localized on another material in

the light emitting material, e.g., PFM (*id.*). Both the hole accepting material and emitting material are within a host polymer, e.g., F8 (*id.*). The TFB has a LUMO level between the F8 and PFM (*id.*). The TFB accepts holes from the hole transport layer, formed of BFA, adjacent the light-emissive layer. (*id.*) "It is believed that the TFB LUMO level also provides an intermediate energy step which enhances the rate of transfer of electrons to the PFM when the device is under bias." (*id.*) As can be seen from the diagrams throughout Burroughes, Burroughes is particularly concerned with forming type II semiconductor interfaces, where the minimum energy difference between the highest HOMO state and the lowest LUMO state is between levels on different sides of a heterojunction (FIG. 2b, col. 2, lines 24-47, col. 3, lines 38-53). Forming type II semiconductor interfaces can provide the intermediary energy step that facilitates movement of electrons and holes between layers. In another example, Burroughes describes an emissive mixture with F8 and F8BT (FIG. 15, col. 13, line 46-col. 14, line 43). F8BT has a HOMO level of 5.9 eV and a LUMO level of 3.5 eV (Table 1). F8 has a HOMO level of 5.8 eV and a LUMO level of 0.7 eV (*id.*). While F8 forms a type I semiconductor with F8BT, both F8 and F8BT form type II semiconductor interfaces with the adjacent layer of BFA.

Burroughes fails to suggest an emissive polymer layer with components where an energy barrier to trap electrons between a LUMO level of the host components and a LUMO level of the electron traps is at least a thermal energy of the layer and a second energy barrier to trap holes between a HOMO level of the host components and a HOMO level of the electron traps is less than the thermal energy. Nor does Burroughes suggest an emissive polymer layer with components where an energy barrier to trap holes between a HOMO level of a plurality of host components and a HOMO level of a plurality of hole traps is at least a thermal energy, and an energy barrier to trap electrons between the LUMO level of the plurality of host components and the LUMO level of the plurality of hole traps is less than the thermal energy. Rather, Burroughes describes combinations of components that form type II semiconductor interfaces. The components that are added to host materials help to inject electrons or holes from a layer adjacent to the emissive layer. Burroughes adds materials to a host material that provide a means for accepting holes or electrons into the host material.

Burroughes is not concerned with the size of the energy barrier between the LUMO level of the host and the LUMO level of the added materials. In one example, Burroughes mixes an emissive layer of F8 with F8BT (FIG. 15, col. 13, lines 46-67). The difference in HOMO levels between the F8 with F8BT is 0.1 eV (Table 1). This difference of 0.1 eV would be at least three times greater than the thermal energy at 300K of 0.0259 eV (thermal energy, kT = 0.0259eV at T = 300K, *see* specification at page 4, lines 3-10, K = Boltzmann's constant = 8.63×10^{-5} eV). A difference of 0.1 eV would require a temperature of around 1168K, or roughly 885° C. Burroughes does not teach that the OLED devices described therein are operable at this temperature. Thus, Burroughes does not teach an emissive polymer layer with components where an energy barrier to trap electrons between a LUMO level of the host components and a LUMO level of the electron traps is at least a thermal energy and a second energy barrier to trap holes between a HOMO level of the host components and a HOMO level of the electron traps is less than the thermal energy. Nor does Burroughes suggest an emissive polymer layer with components where an energy barrier to trap holes between a HOMO level of a plurality of host components and a HOMO level of a plurality of hole traps is at least a thermal energy, and an energy barrier to trap electrons between the LUMO level of the plurality of host components and the LUMO level of the plurality of hole traps is less than the thermal energy. For at least this reason, applicant submits that claim 1 as amended is not anticipated by Burroughes. Claims 2, 4-5 and 7-14 depend from claim 1 and are similarly not anticipated. New claims 29-32 also depend from claim 1 and are similarly not anticipated by Burroughes.

Amended claim 24 is directed to an OLED having emissive polymer layer with host components, at least one of: electron traps or hole traps. The electron traps reduce electron mobility within the emissive polymer layer and the hole traps reduce hole mobility within the emissive polymer layer. If the layer includes electron traps, a first energy barrier to trap electrons between a LUMO level of the host components and a LUMO level of the electron traps is at least a thermal energy of the layer and a second energy barrier to trap holes between a HOMO level of the host components and a HOMO level of the electron traps is less than the thermal energy. If the layer includes hole traps, a third energy barrier to trap holes between a

HOMO level of the host components and a HOMO level of the hole traps is at least the thermal energy, and a fourth energy barrier to trap electrons between a LUMO level of the host components and a LUMO level of the hole traps is less than the thermal energy. For at least the reasons provided above with respect to claim 1 as amended, applicant submits that claim 24 as amended is not anticipated by Burroughes. Claims 25-28 depend from claim 24 and are similarly not anticipated by Burroughes.

Applicant respectfully requests that the anticipation rejections be withdrawn.

The excess claim fees in the amount of $100 and the two-month extension of time fee in the amount of $450 are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other required charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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